

Rhode Island DEM/Division of Agriculture

Specialty Crop Block Grant Program – Farm Bill

Agreement Number: 12-25-B-1485

Final Report

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Rhode Island Agricultural Practices (RIGAP): Expanding Training to Diverse Audiences that Impact the RI Specialty Crop Market

Final Report

Project Co-Directors: Lori F. Pivarnik, Ph.D.

Award No. 12-25-B-1485

Project Summary – Background, Importance

The overall project goal was to expand and help maintain RI agricultural viability through the following specific objectives: 1) continuing to offer Good Agricultural Practices training to RI farmers as well as the RIGAP certification and yearly recertification 2) continuing to provide information regarding the new food safety regulations; 3) continuing to educate consumers about the RIGAP program and safe handling of locally grown produce 4) beginning to increase awareness of school food service directors of the GAP fundamentals; and 5) beginning to engage farmers market managers in food safety training. The importance of these objectives are self-evident as the issues related to produce safety continue to increase, buyers continue to demand assurances of on-farm food safety practices, regulatory requirements are implemented and the “buy local” movement continues to gain popularity.

Rhode Island has seen a trend toward more farms, but smaller in size. RI farmers engage in more retail-type of sales than wholesale and diversify crops that are grown. While participation in the “official” RI GAP certification program by small farms may not be immediately feasible, outreach efforts to encourage participation in GAP training and engage these farmers in implementing food safety practices is a priority. This will not only increase the safety of fruits and vegetables grown on small RI farms, but also prepare these farmers for any future requirements. In addition, while many are specifically exempt from the FSMA/Produce Safety rule on-farm food safety requirements, qualifying small producers still must show that they are in compliance with state food safety regulations and adhere to farm/facility labeling. Furthermore, farmers may still have to incorporate GAP principles into farm activities to retain a specific buyer market, e.g. schools, hospitals. Therefore, it is important to continue to engage growers that control food safety hazards associated with produce needs to be addressed – local does not mean safe.

The national “buy local” movement increases the need for GAP training and promotion. This is not only important to RI farmers. Farmers Markets are growing in popularity. Currently, there are 47 markets operating May-October and 6 winter markets in Rhode Island. In addition, RI Community Supported Agriculture (CSA) has also expanded, with about 40 farms identifying themselves as having a CSA program or exclusively CSA (10-12). With the steady increase in these direct marketing efforts, farmers’ market and CSA managers need to be involved in ensuring that there is a food safe environment for produce sold. Therefore, the outreach efforts regarding produce safety (e.g. GAP principles, produce safety at markets) need to be expanded to include school food service directors and farmers markets/CSA managers.

Project Approach

The RI GAP program and outreach to farmers and other audiences has been successful due to the on-going partnership between URI and RI DEM/Division of Agriculture. This collaboration for implementation of RIGAP has been in place for over 12 years. Responsibilities

are shared equally with URI administering training and outreach efforts and RI DEM managing the on-site audit and issuing yearly certificates. The project partners have met 1-2 times/year to review the status of the program and the program resource materials – including the RIGAP audit and to address any issues of concern. In addition, updates regarding the status of growers during the growing season are made regularly by the RIDEM RIGAP inspector via telephone and e-mail. Members of the project team communicate on a regular basis about project activities. The agricultural specialist is available for on-farm visits and consultations and interfaces with other target audiences (e.g. market managers) to communicate the importance of produce safety practices. This approach of communication, education and collaboration has served this partnership well and resulted in an extremely successful program to help growers and sellers of specialty crops.

This project was very successful in accomplishing all the activities/tasks that were delineated in the proposal. The following work and results were accomplished:

- Advisory group meetings were conducted.
 - The audit and guidelines were reviewed and modified to reflect a more rigorous approach to some key critical issues.
 - A new certification request form was developed for use with new farms interested in becoming part of the RI GAP program
- A comprehensive e-mail list of farmers was assembled in an effort to communicate more effectively with the target audience and to initiate an on-line survey outlined in the project work plan.
- On-line survey of RI farmers was completed and summary report distributed to advisory group. Descriptive statistics used to evaluate data. N=37 RI growers of fruits and/or vegetables. Survey participants that indicated they went to a RIGAP training program (27), 15 were GAP certified and all (100%) certified farmers indicated that the program either definitely had or somewhat had a positive impact on their business. Of the respondents that were not GAP certified, all reported that they learned something from the GAP training that they were able to use in their operations. Over 85% of respondents indicated that would like to receive additional information/updates on topics such as 1) regulations; 2) pest control; 3) food safety plan development and 4) recordkeeping.
- Revisions to existing RI GAP curricula were on-going. Each RI GAP training required material updates and expansion of information.
- The RI certified grower brochure, used by growers and outreach educators for consumers, was updated and reprinted.
- In addition to announcements of RI GAP and food safety plan workshops, farmer outreach efforts were on-going. The Agriculture Specialist spent time expanding farmer outreach through multiple mailings to the entire farmer community and to trained and

certified growers. Examples include 1) distribution of updated RI GAP brochures to certified farmers for use with customers; 3) distribution of refrigerator thermometers and RI GAP refrigerator magnets created for self-marketing; 4) information about writing a food safety plan; 5) distribution of Cornell's Grower Self-Assessment to RI GAP certified growers that attended the first food safety plan workshop (December, 2013).

- Market manager training
 - As an initial effort to market managers regarding food safety issues, the project director gave a brief presentation at the RI Farmer's Market Manager Conference (April, 2013) entitled "Food Safety for Farmers and Farmer's Market Managers". Presentation was part of an annual meeting. There were 46 participants.
 - Revisions/modifications to existing market manager trainings were complete. The presentation focused on measures to minimize food safety risks of products sold s at RI Farmers Markets. PowerPoint presentation entitled "Creating a Food Safety Culture for RI Farmers Markets: Good practices for Market Managers was developed and a training event on March 10, 2015 was organized. There were 16 market managers in attendance. Evaluation was developed; however only 2 were returned. However, those responses indicated that they understood key concepts related to food safety and farmers' markets and indicated that they would be implanting market policies and that vendor training was needed.
- Following RI GAP and food safety plan trainings were completed during this reporting period:
 - 11/20/2013 – RI GAP training. 16 attended reflecting 12 farms, academia and regulatory. Understanding of key GAP concepts was rated 4.25 out of 5 (as outlined in the project narrative and previous project reports) and 9 farmers, or 60% of those trained, indicated their intent to implement produce safety strategies presented at workshop regardless of participation of official certification program.
 - 12/11/2013 – Advanced training , writing a food safety plan. This was the first food safety plan workshop offered and only to those currently RI GAP certified. Workshop was offered in partnership with University of Connecticut food safety expert Diane Hirsch. There were 10 participants representing 9 farms. Understanding of key concepts rated 4.20 out of 5(as outlined in the project narrative and previous project reports). All indicated that they would consider writing a food safety plan. Participants indicated that they were taking the course for anticipated buyer requirements, impact of FSMA rules, perceived importance on liability issues and/or future possible implementation.
 - 4/2/2014 – RI GAP training. 25 attended reflecting 15 farms (20 farmers), 2 foodservice companies, 1 farmers' market manager and 2 from the local USDA office. Of those that answered the evaluation (N=15), understanding of key GAP concepts was rated 4.55 out of 5 (as outlined in the project narrative and previous project reports) and 13/15 indicated that if they even if they were undecided about RI GAP certification participation, they would be implementing some food safety strategies presented at the workshop.

- 3/24/2015 – RI GAP training. 19 attended reflecting 8 farms, 2 food service, 2 market managers, and 1 school garden. Of those that answered the evaluation (N=10), understanding of key GAP concepts was rated 4.55 out of 5 (as outlined in the project narrative and previous project reports) with 7 indicating that they would be implementing on-farm food safety strategies presented even if not interested with becoming RI GAP certified.
 - 3/25/2015 – Advance GAP, writing a food safety plan and standard operating procedures (SOP). SOP training was a new addition to the food safety workshop. Workshop was offered in partnership with University of Connecticut food safety expert Diane Hirsch. This workshop was offered to anyone who had taken the RI GAP training. 18 attended reflecting 12 farms, 1 food service and 1 government (RI DEM/Division of Agriculture). Understanding key concepts was rated 4.45 out of 5 with 9 indicating that they would write a food safety plan and/or they would be implementing strategies presented.
 - GAP training, originally scheduled for December, 2014, had to be cancelled due illness.
- Yearly recertification for RI GAP certified farms was completed in the fall of 2014 for the 2015 growing season. All current RIGAP farmers were recertified and 5 additional farms were certified during this reporting period: total of 39 farms. The Agriculture specialist completed pre-inspection visits to new farms prior to official certification inspections by RIDEM/Division of Agriculture personnel
 - A consumer produce calendar was developed, reviewed and finalized for distribution at farmer markets and other outreach venues – “RI Grown Fresh Produce Availability Calendar”. Printed in color with graphics. The calendar was posted on the URI food safety website <http://web.uri.edu/foodsafety>.
 - Consumer outreach through Rhode Island Master Gardener program. Records were kept reflecting resources distributed. In 2013-2014, an indoor market and outdoor market was visited 4 times each. During 2015 reporting period, the indoor market was visited 2 times and outdoor market 3 times. The indoor markets and outdoor markets average 50-60 and 70-80 consumer visits, respectively. The produce availability calendar and a “Garden to Table” brochure about handling produce safely were distributed. According to the Master Gardeners that manned the table, many consumers took a handout but actual numbers were not recorded. At least 80 brochures were distributed and the calendar was very popular.

Goals and Outcomes Achieved

This project reached all goals and outcomes identified in the program narrative.

The overall goal was to increase participation in the RI GAP training and the certification program and to extend outreach to other target audiences. The project work plan included efforts to: 1) attract new growers to the program, 2) recertify growers currently in the RIGAP program, 3) increase awareness of new FDA food safety regulations and to incorporate key provisions of the rule into the RIGAP training program, 4) educate consumers and school foodservice managers about the microbial safety of produce and the RIGAP program goals and 5) target managers of Rhode Island's farmers markets regarding food safety recommendations for the direct marketing activities.

1. RI GAP trainings were preformed and resources provided to farmers about integrating food safety principles into on-farm production. Farmers were recertified and there were 5 new farmers certified for a total of 40 farms. Workshops were also implemented for writing a food safety plan that targeted both RI GAP certified growers and growers that had attended training but not certified. This was not identified in the original objectives and added due to need. In addition, these trainings targeted market managers and food service directors – both of whom attended trainings; thus increasing awareness of GAP principles beyond farmers. We had anticipated 10-20 farmers/foodservice directors attending each training and reached that goal at each.
2. RI GAP curriculum updates were on-going and information regarding the new food safety regulation was integrated into the presentation.
3. Market manager training curriculum was developed and implemented. We had anticipated that 5-10 managers would attend the training and there were 16 – exceeding expectations.
4. Consumer outreach regarding the RI GAP program was accomplished through the presence of display and resource materials by Master Gardeners and a consumer RI produce availability calendar was developed.

Beneficiaries

The potential beneficiaries of this program include farmers, school food service directors and, ultimately school children. In addition, by expanding outreach to farmers' markets, RI consumers benefit from an expanded network of food safety practices – from farm to table.

Lessons Learned

The lessons learned from previous projects have helped to successfully expand the program. The foundation that already existed allowed for expanded outreach through both

modification of existing programming and development of new programming –both targeting additional audiences. Successful outreach to new audiences indicate a need for these efforts.

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Project Title

RI. DEM GET FRESH BUY LOCAL Campaign

Final Report

Project Summary

This program was built on the previous projects and enhanced our commitment to increase demand and consumption of RI Grown Specialty Crops. Or motivation was to enhance the marketing of Fruits and Vegetables in the State for over 200 farmers. This is needed to help slow down the loss of Agricultural Land to development by making farming of Specialty Crops viable in Rhode Island.

The Rhode Island Division of Agriculture working with specialty crop growers throughout the state expanded on its “Rhode Island Get Fresh Buy Local” buy local initiative by conducting produce preparation demonstrations featuring local celebrity chefs at all RI farmers market and participating roadside stands. The Division also updates its RI Agricultural Display on an annual basis. The Division also uses SCGF to enhance its marketing program by making point of purchase advertising material available to farmers. The need for this project is to help keep Specialty Crop Farming Viable in Rhode Island. Since Rhode Island has such a short growing season it was critical for us to get Specialty Crop Farmers (Fruit and Vegetable Growers) the logo material.

Project Approach

By expanding our marketing efforts by purchasing new graphics for our display and doing shows throughout the State we increased demand for RI Grown Specialty Products (fruit and vegetables). We also expanded our farmers’ market program by using wireless EBT technology at our farmers markets. At the market we increased sales for Rhode Island Specialty Crop Farmers by the use of these EBT machines

Our partnership with Rhode Island Specialty Crop Growers has served over 400,000 Rhode Island residents by bringing the locally grown fruits and vegetables. Working with over 50 farmers markets we have increased outlets for the sale of locally grown Specialty Crops. Fruit, Vegetables, Nursery Stock and Honey are now in demand more than ever.

We also held cooking demonstrations in partnership with Johnson and Wales University at 6 farmers markets throughout the State. Customers were taught how to prepare fruit and vegetables that were being sold at the farmers market. Over 700 people saw these demonstrations.

We also hired two summer interns to work at the farmers markets to help Specialty Crop Farmers sell their products. The interns job was to help specialty crop farmers display their products. The interns job was to give out information about specialty crops and answer any customers questions. Also the intern would interview specialty crop farmers to see if our efforts increased their sales.

In interviewing farmers we have seen a 3% increase in sales of Specialty Crops over last year. We interviewed 50 Specialty Crop farmers at farmers markets and asked if they have seen any increase in sales due to our marketing efforts. Due to the added demand we now have 4 winter farmers markets.

To ensure Specialty Crop Funds were only used for Specialty Crops the DEM/Division of Agriculture contributed over \$50,000 dollars of State funds to cover non Specialty Crops that have benefited from this program. Over 80% of the Agricultural Crops sold in RI are Specialty Crops.

Goals and Outcomes Achieved

By expanding our marketing efforts by purchasing of display material and doing shows throughout the State we have increase demand for RI Grown Products. Also by expanding our farmers' market program and introducing wireless EBT technology into additional markets we have increased sales for Rhode Island Farmers. These sales were documented by bank statements showing sales of fruit and vegetables that were processed through the EBT machines. There was sales of \$12,000 processed on the EBT machine for Specialty Crops. We also measured the increase sales of RI Grown Specialty Crops by speaking and surveying farmers to see if their sales have increased. We know as in the past informing the public about RI Grown Specialty Crops increases demand for such products.

EBT Program was supplemented by 20% of State funds to compensate for the sales of non Specialty Crop items. It has been determined that 20% of products being sold at our farmers markets are not Specialty Crops.

The goals we achieved for the season are:

- Set up and operate EBT systems at 12 farmers markets
- Re-Certified 40 farms for GAP compliance for sales to school districts
- Had cooking demonstrations at farmers markets throughout the season at 6 farmers markets over 6000 people learned how to prepare fresh fruits and vegetables. This was a partnership we have with Johnson and Wales University that is very popular.
- Gave out information to 50,000 citizens promoting RIGrown at shows

-Point of purchase material is critical to educate the public as to what products are RI Grown Specialty Crops. These point of purchase materials also let the farmer help customers identify which are Rhode Island Grown Specialty Crops. We will measure the outcomes of our actions through the surveying of farmers to see if our efforts have increased demand for their products.

-Of the 50 Specialty Crop Farmers Surveyed. All responded that our efforts have helped them in some way to stay viable as a Specialty Crop Grower in RI. They all have seen an increase in sales.

-We created two new farmers markets, but we closed two farmers markets that were not performing to our expectations. The new markets we opened operate November through April.

- We held Agriculture Day at the Rhode Island State house May of 2014 and over 40 Specialty Crop Farmers were able to give out information about the crops they grow and where establishments are located. Over 2,200 people attended the event. There was also a proclamation from the Governor for Agriculture Day in Rhode Island.

-Sales for Specialty Crops in RI have been increased as documented by the New England Agricultural Statistics Census taken for RI.

[http://www.nass.usda.gov/Statistics by State/New England includes/Publications/Annual Statistical Bulletin/CashRec2013.pdf](http://www.nass.usda.gov/Statistics_by_State/New_England_includes/Publications/Annual_Statistical_Bulletin/CashRec2013.pdf)

Using previous years as benchmarks it is clearly seen the increase in sales of Specialty Crops on an annual basis.

-OUR MARKETING EFFORTS HAVE LEAD AGRICULTURE TO BE THE ONLY SEGMENT OF THE RHODE ISLAND ECONOMY THAT IS PROSPERING. We have achieved our goals for this grant cycle.

Beneficiaries

The beneficiaries of the project are all the citizens of Rhode Island and Specialty Crop Farmers. Our efforts have increased the availability of fresh fruits and vegetables for the citizens of Rhode Island.

Lessons Learned

We have learned that marketing of Fruits and Vegetables and other Specialty Crops is critical to increasing sales and keeping farming viable in Rhode Island

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The Rhode Island Farm to Cafeteria Project Final Report

PROJECT SUMMARY

The **RI Farm to Cafeteria Project** is a collaborative program led by Farm Fresh RI. It is designed to bring RI institutional buyers, such as school, hospitals and worksites, and RI farmers together for the development of sustainable purchasing agreements. This project builds on the success of the Rhode Island Farm to School Program, taking best practices and techniques from that arena and applying them to other types of large-scale food buyers. Work on this project includes growing the functionality and transparency of the local specialty crop distribution system in Rhode Island through online listings and information; enhancing the Market Mobile program to serve more food service companies; educating food service buyers and chefs on local specialty crop availability and use; and consumer education to build demand for local specialty crops from the end users.

The Rhode Island Farm to Cafeteria Project is a natural progression of the RI Farm to School Project, which has existed in Rhode Island since 1999, and Farm Fresh Rhode Island's Market Mobile local-only aggregation and distribution system.

With support of Specialty Crop Block Grants, the RI Farm to School program has been successful involving all 36 Rhode Island school districts and seeing a significant rise in the amounts and varieties of local specialty being used by the schools. Twenty-six RI farmers are now involved in the program and some farmers are beginning to plant crops specifically for the school market.

The Market Mobile has been aggregating and delivering local fruits and vegetables since 2009, begun with the assistance of a Specialty Crop grant. Market Mobile now moves nearly \$2million in local foods annually, to area restaurants, grocers, buying clubs, caterers and worksites. Several institutions already utilize Market Mobile, including the Rhode Island School of Design, Brown University, Rhode Island Hospital, Newport Hospital, Blue Cross Blue Shield of Rhode Island, Johnson and Wales University, Aramark school food services in North Providence and East Greenwich and more. The Market Mobile aggregates the specialty crops of thirty-nine farms and delivers to over 250 customers.

The RI Farm to Cafeteria Project addresses two pressing issues in RI – farm viability and preservation of open space and the escalating epidemic of obesity. At a time when large agri-business is supported by liberalized trade agreements, consolidation in the food processing and transportation segment, and government farm programs that favor large farms, small farms find it difficult to compete. In RI, despite these national trends and unfavorable economic conditions, farming is a growing industry. To continue this upward trend and for existing farms to survive and continue to grow, there is a critical need for RI farmers to find new markets for their products.

PROJECT APPROACH

The RI Farm to Cafeteria Project has been working to build demand and facilitate institutional buying by schools, hospitals and worksites in the state. Education and promotion initiatives that teach the benefits of supporting RI Farmers continue to raise

awareness of local foods by institutional purchasers and the consumers they serve. Farm Fresh RI's effort to customize our online shopping platform specifically for institutional purchasers is helping those buyers streamline their purchasing. Our effort to increase institutional demand and purchases benefits RI growers and processors of specialty crops as the market for RI Grown specialty crops expands. Purchasers and consumers benefit, as the variety of items available to them grows along with the economic opportunity.

As of March 2014, **three hospitals** participate in Veggie Box, and one also purchases specialty crops from Market Mobile. (Veggie Box is a multi-farm local-only specialty crop subscription service, coordinated and delivered by Farm Fresh to worksites across the state. Veggie Box is a major strategy to get more local fruits and vegetables to more customers in Rhode Island.) One hospital customer of note has stepped up to be a model for others in the state. Kent County Hospital has a number of initiatives that promote local food. They purchase and serve RI Grown specialty crops in their cafeteria as well as in their patient meals program. The Food and Nutrition Services Director at Kent both hosted and presented in the RI Food Policy Council's "Food Matters" June 2013 discussion on incorporating locally grown specialty crops into institutional settings. She has since been transferred to another hospital, but her local purchasing initiatives and marketing materials continue to be a part of the cafeteria culture at Kent Hospital. She has also brought her local specialty crop purchasing initiatives to the hospital she currently works in, New England Baptist Medical Center, so now Massachusetts farmers have a new outlet for their specialty crops.

Two colleges and schools are participating in Veggie Box and **seven others** are purchasing local fruits and vegetables from Market Mobile, Farm Fresh's local food hub program. Conversations are on-going with six more universities about joining the Veggie Box program for summer 2014.

Farm to Cafeteria initiatives, promotions and educational programs have resulted in the growth of institutional purchases of Market Mobile and Veggie Box specialty crops from **\$162,355 in 2011 to \$444,872 in 2013**. As more fresh produce is purchased and consumed by those within our institutions, the health of both our agricultural economy and our citizens is positively impacted.

Efforts to improve and enhance Market Mobile to better serve institutional buyers include the development of a page on the Market Mobile website specific to institutional purchasers. A page including information on the availability of specialty crops most suitable for cafeterias, in amounts necessary for that type of purchaser, as well as planning tools for those who create menus in advance of a season, is now easily accessible to Market Mobile's institutional customers.

Farm Fresh has recently completed a food-safe SOP (standard operating procedures) document, and licensing warehouse staff as Serve Safe Food Safety Managers. Farm Fresh is monitoring the Food Safety Modernization Act and its implication for the warehouse, and recently passed a GHP audit by the USDA. Farm Fresh is implementing a

Hazard Analysis Critical Control Point (HACCP) plan, which is also required by many large institutions and food service management companies to become a vendor.

By maintaining existing farm to school education programs in public school districts throughout the state, Farm Fresh continues to educate school communities on the economic, environmental and health benefits of supporting local farmers. Between March 2013 and March 2014, 77 separate programs were presented to over 5,600 school children and community members in districts across RI. Summer school gardening series at 5 locations, and workshops at 6 child care centers were added to the suite of classroom education programs and cafeteria events traditionally presented. These educational workshops (which allow students to touch, smell, plant, harvest and taste RI specialty crops) are aligned with our Veggie Box program, so that the lessons student learn about fresh fruits and vegetables can be reinforced later in the home as families enjoy Veggie Box contents together.

Technical assistance to guide school food purchasers in the sourcing of products and relationship building took place “on farm” during summer 2013 when Food Service Directors and Managers **visited four specialty crop farms** to tour the fields. Matchmaking of school food providers and farms within or closest to their districts resulted in purchasing relationships in the state’s largest school districts. An annual face-to-face stakeholders meeting with farmers and distributors in January 2014 cemented relationships and provided the opportunity for the group to plan for the coming season, ensuring sustainable purchasing agreements into the future. A frozen, local specialty crop pilot is planned for harvest 2014 which will create more opportunities for growers, processors and purchasers to enjoy purchasing relationships.

In summer 2013, outreach to institutional purchasers included visits by Veggie Box staff and chef to showcase Veggie Box produce in easily prepared recipes. Hospital staff and patrons received samples, recipe cards and nutrition tips as well as the opportunity to sign up for Veggie Box deliveries. The strategy to promote local specialty crop purchasing by on-site cafeterias involves building enthusiasm and demand for local specialty crops among cafeteria diners and staff while encouraging them to demand RI Grown wherever they dine.

In November of 2013, Veggie Box brought on its first full time staff member, Beth Myre, as Veggie Box Program Manager. Ms. Myre has been able to streamline many Veggie Box processes and therefore allow the program to expand and serve institutional customer’s needs. Two Veggie Box interns will be joining the team for the summer months; Veggie Box’s busiest season. The expanded Veggie Box staff provides more capacity for outreach, program development, coordination with farms and general program developments.

In December of 2013, Veggie Box Program Manager Beth Myre and Program Director Hannah Mellon attended the Fair Food Business Boot Camp, focusing on business plan development and program improvement for the Veggie Box program. This process resulted in many new changes and developments to the program, including year-round

programing, a new subscription-based model, and perspective on the program. The experience and training have already helped the program grow and expand its professionalism and outreach potential.

Community partners continue to prove their commitment to Farm to Cafeteria efforts by supporting the programs in various ways. School districts work to incorporate farm-to-school education programs in the classroom setting, while Wellness Committee members generate good will and demand for locally grown specialty crops in their school meals and snack programs. As a result of input from some Providence Public Schools Wellness Committee members, the city of Providence included a stipulation in their RFP for a food service provider that asked for 15% of the food to be sourced locally. Due to this kind of public demand, the Food Service Management Companies who serve our school districts and hospital communities are building relationships with farmers and requesting RI Grown specialty crops from their produce distributors. In all cases, school menus advertise and celebrate the RI Grown fruits and vegetables purchased and served.

Local specialty crop growers partner with us to host farm field trips for students, as well as school and hospital food purchasers. Healthcare Without Harm has been an active champion of locally grown specialty crop purchases by hospitals, recently signing an MOU with Farm Fresh RI to formalize the alignment of the organizations' work. Both Healthcare Without Harm and Healthy Hospital Environments of RI have joined with the RI Food Policy Council to expand the network of support for efforts to promote RI produced foods, including specialty crops, to hospitals. Brown University Sustainable Food Initiative continues to advocate for a culture of local food support by creating a large farm-share program, with over 400 members. Much of the food purchased for their farm share program is sourced through Farm Fresh's Market Mobile.

GOALS AND OUTCOMES ACHIEVED

Goal	Accomplishment
Additional purchasing of local specialty crops by institutions for their cafeteria, utilizing Market Mobile aggregation and distribution system	Market Mobile sales of specialty crops to institutional purchasers have increased from about \$134K in 2011 to \$445K in 2013
An online database for institutional buyers that shows specialty crop availability from area growers	A Market Mobile website page specifically designed for institutional purchasers showing products from area growers in amounts appropriate for institutional use has been created.
Maintaining farm to school program with public school districts and expanding work with independent schools, daycares and	All 36 RI school districts actively involved in Farm to School in their cafeterias by procuring local food. Education programs

universities	have been presented to 21 districts. Education programs and technical assistance for procurement provided to 6 day care centers , one of which has a central kitchen that serves 17 centers. We have established a new relationship with a preschool that has 5 centers and a central kitchen.
By adapting techniques from farm-to-school initiatives to advocate local specialty crop purchases by hospitals, worksites and similar institutions	5 independent schools now make local specialty crops purchases through Market Mobile. 2 private schools and 1 public school participate in the Veggie Box program.
Continue farm to school education programs; growing and adapting them for use in other types of settings such as worksites, communities of faith and care facilities	Programs have been adapted for use in settings such as hospitals and worksites, involving employees in sampling, cooking demonstrations, interactive activities that raise awareness of local farms and food and panel discussions to understand the issues involved in institutional purchasing of local foods.
By continuing the establishment of the subscription fruit and vegetable worksite delivery program, creating a culture of buying local at worksites and community centers	A culture of buying local food has been created in at least 17 institutional Veggie Box sites. In addition to participating in Veggie Box, 4 hospitals in RI h well as the hosted multiple local food cooking demonstrations. Information sessions featuring local produce sampling have taken place at 13 institutional Veggie Box sites .

Outcome	Progress towards achieving target
Facilitate institutional buying by schools, hospitals & worksites	Farm Fresh has recently completed a food-safe SOP (standard operating procedures) document, and licensing warehouse staff as Serve Safe Food Safety Managers. Farm Fresh is monitoring the Food Safety Modernization Act and its implication for the warehouse, and recently passed a GHP audit by the USDA.

Facilitate institutional buying by schools, hospitals & worksites	Development of Market Mobile page of fruits and vegetables, specific to institutional purchasers is complete and has been shared with current institutional purchasers as well as local food advocates in Southern New England.
Build Demand from institutional buyers Baseline: All 36 public school districts are participating and at least 5 universities are purchasing local specialty crops	All 36 public school districts continue their purchasing, 6 universities have made purchases of local specialty crops through Market Mobile and Veggie Box, 2 independent schools and 1 public school have made purchases of local specialty crops by participating in the Veggie Box program
Build Demand from institutional buyers Baseline: 3 hospitals and 8 worksites made purchases of specialty crops for their cafeterias from Market Mobile totaling \$40K in 2011	Project has increased the number of sites purchasing specialty crops to 27 (up from 20) and increased the dollar amount of specialty crop sales to \$444,872 in 2013
Build Demand from institutional buyers	Implementation of Farm to Cafeteria information sessions has begun. 13 worksites, communities of faith and care facilities have hosted Farm to Cafeteria information sessions, promoting the purchase and use of Rhode Island specialty crops, so far.
Build Demand from institutional buyers	Target is 1,000 Veggie Boxes delivered to 50 worksites across RI – which we exceeded at our peak in the summer. Subscription numbers vary with the seasons. We continue to work to build demand for Veggie Box and in 2014 are offering the program year round in 2014. Outreach to new institutions is planned for 2014 and as of spring is going well.

BENEFICIARIES

The groups that benefit from the completion of the RI Farm to Cafeteria project's accomplishments include RI Specialty Crop Growers, RI institutional food purchasers (schools, colleges, universities, hospitals, day care/preschools, and worksites, institutional employees enrolled in Veggie Box and their families, as well as the cafeteria patrons they serve.

Through Veggie Box in 2013, 145 families at Rhode Island institutions have received 1,234 Veggie Box, for a total purchase volume of \$30,850 of local food. The nearly \$445,000 of local specialty crops purchased by 27 institutional customers fed thousands of customers across the state of Rhode Island. Farm Fresh estimates that impact of local food purchases on the local economy at 2.6x¹, with an estimate economic impact of \$1 million on the local economy.

LESSONS LEARNED

Experience has shown us that local food purchasing initiatives often exist because of one invested individual at an institution. Efforts to engage a team or core group of influential administrators and staff members at an institution may ensure that local purchasing continues even if the original champion of the cause leaves their position.

We have learned that Veggie Box is a great opportunity to begin a relationship with institutions outside of the cafeteria. Many institution's cafeterias are managed by food service companies such as Sodexo and Chartwells, which makes bringing local food into the cafeteria especially challenging. Veggie Box helps build awareness of local food to institution's campuses and allows Farm Fresh staff to establish connections with institution's staff members and identity champions with the institution. This foundational work is necessary to begin the next steps of exploring how to bring local fruits and vegetables into the actual cafeteria. Farm Fresh is working towards achieving the certifications needed to serve these food service management companies, so these relationships will become key leverage points in the coming years.

Development of an "Institutional Purchaser" specific web page was reasonable to accomplish, however communicating with institutional purchasers and getting feedback on the usefulness of that page has been very challenging. Future work on this project will include a focus on developing relationships and communicating better with institutional purchasers.

The Fair Food Business Boot Camp experience helped the Veggie Box Team expand into a year-round program and transition to recurring subscription model, instead of a session-based model. Individuals are now subscribed until they decide to stop, rather than signing up for distinct sessions. The change to a year-round system allows us to maintain relationships with sites all year long, plan new winter and spring specialty crops with farmers, and keep program participants engaged with the program. The recurring session model also allows Veggie Box to capture data from customers about why they leave the program, allowing us to collect important feedback and better adapt the program to meet customer's needs.

In 2013 we also learned that Veggie Box is a great tool to introduce individuals to the superior quality and other advantages of purchasing locally grown specialty crops.

¹ Meter, Ken. 2008. Local Food as Economic Development:
<http://www.crcworks.org/lfced.pdf>

Veggie Box survey data has found that the majority of Veggie Box customers are new to subscription-based model of vegetable delivery and nearly half did not have previous experience with locally grown specialty crops. Veggie Box has opened up a large new customer base for local food, both at institutions and for their employees. Veggie Box also allows Farm Fresh to reach a new customer base at institutions in the southern part of the state, where fewer Farm Fresh programs are offered, and expose many new people to the fresh local fruits and vegetables.

Institutional customers often have unique program implementation needs. There are often strict security rules for delivery, insurance needs, and a hierarchy of committees and individuals that need to sign off on a program before it can run on a campus. In 2013, the Veggie Box team gained crucial experience in meeting these various needs and has allowed us to make changes to our outreach approach in 2014 to better serve these needs. Some of the key lessons learned were that site coordinators, often a single individual interested in bringing the program to their workplace, have to work through a network of supervisors and committees to gain the approval to run the program. For 2014, we are planning on developing new marketing material intended for these individuals to use to present the program to supervisors and committees. We hope that this targeted approach will help these site coordinators gain the approval necessary to start the program.

In 2013 we used a variety of outreach methods and found that building strong relationships with individual site coordinators was the most successful way to bring new employees on board and ensure smooth program operations. For 2014, the Veggie Box team plans on focusing on beginning relationships with new institutional customers with face-to-face meetings, targeted follow up and customized outreach materials to help site coordinators run the program successfully. Another outreach strategy we discovered in 2013 and have further implemented in 2014 in setting up peer-to-peer connections with institutions. Many of our current institutional customers are willing to speak with potential new institutional sites about how to set up the program at their sites. This peer-to-peer communication has been extremely helpful in addressing any lingering concerns.

The continued focus on food safety will ensure that the Farm Fresh warehouse is able to stay relevant and better serve both institutional customers and opening up new market opportunities for local specialty crop farms. The development of food safety procedures that meet institutions standards such as our HACCP plan, a food-safe SOP and a 3rd party GHP audit are positioning Farm Fresh to become a specialty crop supplier to two very large food service management companies. This outcome was a long-term goal for Farm Fresh, but due to favorable circumstances we are expecting to serve both Aramark K-12 and Chartwells Higher Education beginning in Autumn 2014. Aramark purchases food on behalf of 18 school districts in RI and Chartwells Higher Ed purchases food on behalf of 15 colleges/universities in southern New England.

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ADDITIONAL INFORMATION

In the spring of 2014, Veggie Box participated in a Roger Williams University undergraduate marketing and advertising class. Six groups of students spent the semester developing marketing plans and materials. Their new and interesting ideas, along with the feedback and advice from the class professor, have provided the Veggie Box team with lots of great information and ideas, as well as strengthening our relationship with Roger Williams University.

Specialty Crop Block Grant
“ Enhancing New England’s Apple Orchard Varieties”
(FY 2012 12-25-B-1467)

New England Apple Association

Final report
Submitted by Russell Powell, project director
October 30, 2015

1) Project Summary

The initial purposes of “Enhancing New England’s Apple Orchard Varieties” was to educate consumers about Rhode Island’s apple industry with photography from its orchards, and to develop the means to introduce new varieties to New England’s growers.

Rhode Island’s apple industry’s is the smallest in New England, with just 230 acres in 2014, according to the USDA. When most consumers think about apples in New England, they generally think of the other, larger states. Rhode Island’s apple industry is vital, but most of its orchards are small; the largest, Steere Orchard in Greenville, is only about 25 acres. Most of the state’s apple crop is sold direct to consumers, through pick-your-own operations, orchard stores, and farm stands. On such a small scale, it has been challenging for the state’s apple industry to find cost-effective ways to raise its public profile.

Newly developed varieties for the mass market are now almost universally trademarked, and New England orchards lack the opportunity or financial resources to purchase licenses to grow them. Without the opportunity to introduce new varieties, it will become more difficult for growers to keep and attract new customers in the future. This two-state project with Massachusetts and Rhode Island sought to introduce to New England new varieties under development that lacked some quality for mass production on a national scale, but that might

excel in our region's soil and climate.

2) Project Approach

Project director Russell Powell, senior writer and director of special projects for the nonprofit New England Apple Association, consulted with researcher Heather Faubert of the University of Rhode Island and other leaders of the Rhode Island Fruit Growers Association to identify orchards and subject matter for photography. Powell successfully scheduled and oversaw the photo shoots, and edited the results. Photography — two days each by Powell and Bar Weeks, executive director of the New England Apple Association — was scheduled in each of the four seasons.

In consultation with Weeks, Powell selected images from Rhode Island's orchards for the 2014 and 2015 New England Apples wall calendars, and the association website (newenglandapples.org), weblog (newenglandorchards.org), and quarterly newsletter (*McIntosh News*).

The goal of introducing new varieties into New England encountered several obstacles. The original proposal had to be amended in light of the unexpected decision of Cornell University's apple breeding program to decline partnering with the New England Apple Association to develop one or more new varieties for our exclusive cultivation. The amended plan was to undertake additional research and seek out other institutional partners to develop new varieties for New England's orchards.

Powell reached out to David Bedford, head of the apple-breeding program at the University of Minnesota. That program has developed such varieties as Honeycrisp, Zestar!, and Sweetango in recent years; the latter, a new entry introduced in 2012, is trademarked and cannot be cultivated by New England growers. Due to the university's success in developing new varieties that tolerate Minnesota's cold winters, this looked like a good match with New England's orchards on horticultural grounds.

Bedford has agreed to evaluate apples under development to determine which, if any, have potential for New England. If so, Bedford will supply the Association with samples so New England growers can assess such critical consumer traits as taste, texture, and color.

Powell also contacted Phil Baugher, president of Adams County Nursery in Pennsylvania, one of the leading suppliers of trees to New England's apple industry, and a supplier to a second apple-breeding program, based at Rutgers University in New Jersey. Its climate should be compatible for most varieties, and the program has already produced several cultivars that have succeeded in New England, including Jersey Mac and SunCrisp.

Powell researched the various models that have evolved in trademarking apples since the name Pink Lady was trademarked to market the Australian variety previously known as Cripps Pink, in 1989. He contracted with patent attorney Deborah Basile of Doherty, Wallace, Pillsbury & Murphy P.C., in Springfield, Massachusetts, to research and report on the legality of trademarking a new brand name for cultivars that may be chosen for trademarking.

Neither the Minnesota nor Rutgers programs have produced candidates for New England growers to date, however. After consultation with growers and industry leaders, Powell also anticipated reluctance among New England's medium to small-sized orchards to commit the time

and money for trials on unproven varieties that could take years before providing a significant return on their investment. In light of this, he came up with an innovative idea that greatly reduces the growers' risks: to rebrand and trademark one or more existing cultivars that have outstanding features but that have underperformed in the marketplace.

An attractive apple for this approach is Jonagold. A 1968 cross between Golden Delicious and Jonathan developed at Cornell's New York Agricultural Experiment Station, it has become popular in Europe but has failed to duplicate that success domestically. This is perplexing, as Jonagold has good size, outstanding color and flavor, and a distinctive texture similar to Honeycrisp — the most popular new variety to hit the United States in the past several decades.

One theory about Jonagold's lack of commercial success in the United States is its name, which fails to communicate its distinctive beauty or flavor. The apple's name is strictly botanical, a simple amalgamation of its parents' names, chosen during an era before marketing considerations guided the process for naming new varieties.

As a result, on crowded produce shelves Jonagold cannot compete with either well-known, traditional brands like McIntosh or Cortland, or new, market-driven brands like Smitten, Jazz, or Envy. New York state introduced two new managed varieties in 2014, RubyFrost and SnapDragon, whose names were carefully vetted before their release (both of these trademarked apples can only be grown in New York state).

Patent attorney Basile determined that New England's growers are legally able to market Jonagold under a new, trademarked name for their exclusive use. The cultivar name Jonagold cannot be trademarked, but it can be rebranded and legally protected with a new, trademarked name.

The initial response to this idea among growers was very positive. Most agree that Jonagold is an outstanding eating apple, and New England growers have experience growing them, albeit on a relatively small scale to date.

This strategy will allow New England's apple industry to capitalize on the potential of this variety in a unique way, minimizing risk to growers by providing them immediate returns for Jonagolds already bearing fruit as they simultaneously invest in planting new trees to meet the anticipated increase in demand.

When presented with them, New England's growers can still test apples under development from the University of Minnesota and Rutgers, but in the meantime they can add variety and distinction to their orchards in a way that fits the size and resources of our industry.

Powell conducted taste tests with Jonagold at several consumer events in Massachusetts in the fall of 2014, including Tower Hill Botanical Garden in Boylston, Historic Deerfield in Deerfield, and the Eastern States Exposition in West Springfield.

In May 2015 Powell contracted with Marketing Specialist Joanne Scheuble of Cambridge, Massachusetts, to 1) research and plan to develop an appropriate process for understanding the attributes of Jonagold and considerations around its new name; 2) conduct structured telephone interviews with key stakeholders to gather facts and perceptions about Jonagold and the market; 3) identify potential new names using established techniques for generating successful product names, and test for trademark availability; 4) recommend a new name in consultation with project

director Powell, executive director Weeks, and stakeholders; and 5) test the new name with consumers at the 2015 Eastern States Exposition and other venues.

At the conclusion of this process, the name JuicyGold was chosen as the New England brand name for Jonagold. Patent attorney Basile has filed the federal trademark application, and the name is expected to be approved in early 2016.

These are the main factors in choosing the new name:

- 1) JuicyGold is close to Jonagold, so it is not likely to confuse consumers the way Crispin — a new name for the Japanese apple Mutsu — did when it was rebranded in England in 1968.
- 2) Each word — “juicy” and “gold” — says something about the experience of eating the apple. Jonagold, in contrast, is strictly a botanical name.
- 3) “Juicy” was the term used most frequently to describe Jonagold by growers and other stakeholders interviewed by Scheuble. (Interestingly, no other apple has “juicy” in its name.)
- 4) The capital “G” on gold is a double entendre, referring not just to the apple’s color or its Golden Delicious parent, but also as something of great value.
- 5) Putting them together in the same word is consistent not only with “Jonagold,” but with recent apple names like CrimsonCrisp (2005) and RubyMac (2007).

JuicyGold is a solid name that will endure.

3) Goals and Outcomes Achieved

Outcome #1 of the grant project, greater awareness of Rhode Island orchards and the varieties they grow, met with some success:

Rhode Island orchards were featured in the 2014 New England Apples wall calendar on the cover (Dame Farm and Orchards), April (Rocky Brook Orchard), and August (Steere Orchard), and in 2015 in March (Sweet Berry Farm), August (Steere Orchard), and November (Hill Orchards). Photography from Rhode Island orchards was published on several occasions in the newsletter *McIntosh News* and the weblog newenglandorchards.org.

Collectively, the calendars, newsletters, and weblog have reached more than 100,000 consumers. The photography will continue to be used going forward.

The expected measureable outcome of a 20 percent increase in hits to the New England Apple Association website, newenglandapples.org, was surpassed, to an increase of more than 33 percent, from 2,485,219 hits in 2013, to 3,346,820 hits in 2014.

Rhode Island’s growers did not realize a 10 percent increase in sales above the state’s five-year average of 57,000 boxes, however, as a result of a smaller crop of 54,000 boxes, below the state’s five-year average of 57,000 boxes. The smaller crop was a result of several weather-related factors, including an increase in the bacterial infection fire blight, and uneven pollination

during spring bloom.

Outcome #2, ensuring that New England's growers have access to new varieties, has also met with partial success:

JuicyGold, the new trademarked name for the cultivar Jonagold, will help the apple fulfill its enormous potential as a premium variety, and identify it as New England grown.

The new name was introduced at the 2015 Eastern States Exposition in September in the New England Apple Association booth in the Massachusetts Building, and JuicyGold received a very positive response. Most apple varieties at the booth were sold during the fair for 50 cents apiece; the premium variety Macoun was sold for \$1, Honeycrisp \$1 or \$2. JuicyGold was sold at \$1, with no question or complaint.

The New England Apple Association is now working on a strategic rollout of the new name JuicyGold for the 2016 fresh harvest, working with organizations like Red Tomato, a high-end produce company serving all of New England. Growers like Pine Hill Orchards in Colrain, Massachusetts, have already begun planting more Jonagold in anticipation. The New England Apple Association has a pending Specialty Crops Block Grant proposal with the Massachusetts Department of Agricultural Resources to promote JuicyGold with in-store tastings, a video, and other promotions, and anticipates seeking matching Specialty Crop promotional funds from at least two other New England states in FY2017.

The goal remains to position JuicyGold as a premium apple \$5 per box price more than traditional varieties like McIntosh and Cortland (currently at about \$20 per box), but we will not have data for at least another year.

The goal of identifying new apple varieties for cultivation in New England has produced potential partners in the University of Minnesota and Rutgers University apple breeding programs, although no cultivars had been submitted for consideration by the end of the grant period.

4) Beneficiaries

All of Rhode Island's approximately 25 commercial apple growers plus related industries benefited from the higher profile achieved from the photography and its inclusion in New England Apple Association print and online publications.

The 2014 Rhode Island apple crop was just 43,000 42-pound boxes, well below the state's five-year average, which dropped to 53,000 boxes. The 2015 crop is estimated at 55,000 boxes, a 28 percent increase over 2014. At \$20 per box (average price for leading varieties like Cortland and McIntosh), this represents an increase in revenue of \$240,000 in 2015 compared to 2014.

Every one of the 300-400 apple growers in New England stand to benefit by adopting the trademarked name of JuicyGold for Jonagold. The new name will identify JuicyGold as a premium, New England-grown apple. There is no available data on existing Jonagold trees in New England, but more are already being planted for 2016.

At the premium price of \$25 per box, every interval of 10,000 boxes will generate \$250,000 in revenue, including \$50,000 above the going rate for traditional varieties.

5) Lessons Learned

There were many lessons learned as a result of completing this project, including:

- While this could change, the threat to date from trademarked varieties imported from outside of the region has been less than originally anticipated, in part as a result of the strength of traditional New England varieties like Cortland and McIntosh, and in part because most of the trademarked varieties lack distinction and have not been widely available.
- The opportunity to bring in new varieties for exclusive use by New England growers remains a distinct possibility, but depends on the apple breeding programs to provide our growers with suitable candidates, and at the end of the grant period this has not occurred.
- If and when we can consider a new variety under development, it will need to be tested by growers and consumers for a period of years before its wide commercial release.
- Any new trademarked variety will need to be broadly available to New England's growers, or else a costly administrative and oversight program will need to be in place to protect and enforce use of the trademark.
- At the same time, to succeed, a trademarked name must be heavily promoted in its first few years. Without an adequate promotional campaign, any new apple may take years longer to succeed, if it all.
- We now have mechanisms in place to name and trademark an apple variety to help it reach its market potential, identify it as New England grown, and sell it at a premium price.

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Soil Loss and Farm Preservation Policies in Rhode Island

Final report for Specialty Crop Grant 12-25-B-1485

W. Michael Sullivan, PhD - University of Rhode Island
Rhode Island Nursery and Landscape Association (RINLA)

PROJECT SUMMARY:

The United States Department of Agriculture through its Natural Resources Conservation Service implemented a crop bias in the Farm and Ranch Protection Program (FRPP). Land farmed and normally in the production of balled and burlap (BB) nursery stock or turfgrass sod have been treated as causing unacceptable soil losses and thus not eligible under normal production programs for this USDA program.

This prohibition appears based almost solely on estimates of soil removal during the harvest of turfgrass sod or BB nursery stock conducted by Luce in CT (2008) and frequently referenced as 'the LUCE OR UCONN Study'. These two specialty crop groupings currently represent the greatest fraction of both acreage and values and have for the last three decades in Rhode Island.

A significant public policy concern (available and clean water) is exacerbated by the fact that most of these sod and nursery stock farms are positioned on the landscape in prime soils over aquifers of significant size and value. Non-farm development on these sites directly impairs and compromises water quality and sources of the future. The economic value and activity of both commodities are directly linked to housing and development economy. Significant adverse impacts of housing downturn have been felt. Farmland once potatoes and vegetables, converted to sod and nursery stock in the last 50 years, now with a concern for future economic agricultural income need access and consideration of all potential protection programs. The policy which forces a producer to make a choice between crop systems with reduced margins, reduced income or development is a direct consequence of the current policy.

No other commodities are known to be discriminated against by USDA and regional agricultural futures are at risk for continued economic survival. If these superior and highly productive lands are lost to development, the already limited regional agricultural viability will be further adversely impacted. Soil losses, management options that reduce soil loss along with other impacts have been collected, documented and now an analysis leading to objective presentation to policy makers is forth coming.

The funding was used exclusively to support collection and analysis of soil data, cropping and management alternatives along with essential economic data. These activities were guided by Dr. Sullivan working directly with undergraduate and graduate students from University working as interns but

could not have occurred without the collaboration and cooperation of the members of RINLA and the New England Sod Producers Association.

The average age of farmers in Rhode Island exceeds 58 years and many growers have to develop transition plans to the next generation of owner/operators or exit strategies. The exit strategy most common is sale to non-farm use. The cash-flow challenges under the best of times have been compounded by economic decline since 2008 in addition to ongoing concerns with inheritance taxes, sales structures, new operator loan opportunities and development land values greatly increase the pressure on prime farmlands being developed to non-farm properties.

Both land and new farmers are needed for continued viability of agriculture on regional and national basis. Activities that introduce young pre-farmers to developing knowledge and the best agricultural practices will allow us to have both into the future.

No current research efforts focused on the economics, management options and ecological impacts of the FRPP policy barriers are known and longitudinal study requirements could cause RI and Southern New England farmland to disappear before it can be preserved. The 'LUCE OR UCONN' study focused exclusively on soil site conditions believed associated with these commodities but was simply a measure of soil morphological conditions across the landscape. Several sites where soil depths were measured by Luce, included only one or two crop cycles of sod or nursery crops but knowingly had prior decades of tobacco, corn or other commodities. The 'LUCE OR UCONN' study did not incorporate longitudinal cropping history or the known differential impacts of harvest equipment, seedbed preparation, soil amendments or the economic consequences of these variables and is thus flawed. The 'LUCE OR UCONN' study is believed to be adverse in intent and flawed in procedure and interpretation. It has never been subjected to peer review and remains unpublished in any scientific venue.

PROJECT APPROACH

The potential value and impact of the proposed efforts are regional and not limited to any one producer. Over 800 individuals are members of the Rhode Island Nursery and Landscape Association (RINLA). They collectively steward in excess of 5,000 acres in RI with some operations having additional production land in nearby states of MA, NH and ME. These commodities and operations are collectively contributing in excess of \$1.5B annually in the regional economy. The economic analysis expected from this work will allow the development of precise and full assessment of both the policy and the on-farm practices that can ameliorate perceived and measured soil losses attributable to the commodities.

A 'Producer Oversight Team' (POT) populated with organizational members participated in the assessment and data processes so they are scientifically appropriate, universally understood and agreed to by parties.

A sequence of meetings and site visits established a producer/cooperator list and then the overlapping dataset information of crop history, soil type, farm practices and current crop schedule will be established. Repeated farm visits were made to collect crop condition information and estimate market condition to coordinate harvest observations and sample collection. Soil samples from the study fields and associated landscape were collected.

Additional soil samples were taken from similar soils and landscape positions in the vicinity of these actively farmed fields. Soil morphological attributes such as horizon depth and other descriptive characters were recorded. Soil organic matter measurements in both crop and non-crop sites were taken.

Harvest operations will be directly observed, equipment and techniques verified and random harvest units (HU) collected. These HU samples were destructively sampled and soil and plant materials separated. Post harvest soil cores were collected and separated into plant/soil components to measure residual plant biomass on the production sites.

Producers were interviewed for additional data to allow their estimate of differential costs of various field operations or management practices.

The physical data and management operational data are being subjected to economic analysis that will result in a management-cost-consequence matrix. This matrix will allow policy makers to consider provisions of production programs, so called Best Management Practices (BMPs) which might be required to be used while commodities of concern are grown.

GOALS AND OUTCOMES ACHIEVED

Over twenty producer sites were incorporated into the study. In excess of 200 soil column and associated horizon samples were collected, analyzed and summarized. Cropping histories of the cooperator fields were constructed by interviewing farm staff, owners and past owners. Soil samples collected were chemically analyzed in cooperation with the University of Connecticut Soil Laboratory. Plant measurements were obtained by use of a hydro pneumatic root elutriation system and by manual washing of soil from plant roots. These data are held in files and being reviewed but are covered by promises of confidentiality made with growers.

Soil profile depth and composition across sites have been recorded and stored. These site specific data are averaged across commodity so individuals are and cannot be identified. The soil and crop information have been, can and will be incorporated into extension outreach efforts and producer informational sessions. Soil sample collection landscape position is a historic and significant contributor to the horizon and depth characteristics. A clear outcome is a requirement of consideration of landscape position as a dominate soil development and morphology influence when compared to short or even moderate term (<30 years) land use.

The major outcome desired has been achieved. Objective data associated with historic crop production under long-term management conditions has been collected. This data can and will be utilized in developing authoritative fashion and submitted to refereed scientific journals and presentations made to scientific communities for peer review. The public policy goals of having data that allows for the comparison of soil loss and soil condition data to be used in farm preservation policy discussions and actions.

BENEFICIARIES

There are over 800 individuals are members of the Rhode Island Nursery and Landscape Association (RINLA) and there are approximately 10 active members of the New England Sod Producers Association and a substantially larger membership of their national organizations that will be interested and potentially use the output of this work.

The collective citizenry will benefit if additional farm land is protected for future generations. Decision makers can benefit by having objective information to base programmatic decision making.

LESSONS LEARNED

The lessons learned include that no individual crop or production program can be characterized as 'good' or 'bad' regarding soil loss or condition. Individual producer management protocols and practices can increase or decrease stewardship outside the 'norm'.

An example could be that an individual sod grower might 'harvest' soil (125 tons/ac/harvest) in gross excess of 'T' of the Universal Soil Loss Equation or may 'harvest' soil (3.2 tons/ac/harvest) well under 'T' estimation of crop specific soil loss estimation. Management factors having the largest impact in the range of outcomes include: sod age (>12 months age < 4 tons/ac/harvest versus (< 8 months age >32

tons/ac/harvest) and harvest technique equipment (3.5 tons/ac/harvest 16 inch harvest width versus > 30 tons/ac/harvest > 24 inch harvest width) and. Other factors include crop rotation history, sod blend diversity and market supply and demand economics.

Housing growth and associated human development projects increases product demand over regional supply capacity and can lead to non-sustainable, soil adverse harvest practices. High demand sod harvested at under 8 months age and mown at 0.375 inch height were associated with very high soil harvest losses (>45 tons/ac/harvest) for recreational (lawn bowling) applications while 'low maintenance' turfgrass blends (Tall Fescue, *Festuca arundinacea*) produced at > 14 months age had higher soil losses than Kentucky bluegrass (*Poa pratensis*) at same age (6.5 versus 4.8 tons/ac/harvest). Turfgrass sod related soil harvest losses appeared to be more certain in corporately owned and operated producer operations compared to family farm ownership.

Nursery stock, harvested via balled and burlap or power spade technique, are substantive when measured as a harvest year loss (>60 tons/ac/harvest). However, these same soil/plant harvest losses are significantly reduced if averaged across production duration (5 tons/ac/harvest). Harvest options such as a 'bare root' harvest, not common in Southern New England, might become accepted and result in net soil gain over crop lifecycles as root growth contributed to soil development. A production restriction associated with harvest technique therefore might allow for development right acquisition with no other bias necessary.

Management alternatives in the nursery sector might include minimum age, maximum 'ball size' or even the provision that 'zero' soil loss techniques such as 'pot in pot' production techniques be required. When there are associated costs with the development of 'pot in pot' programs the base value of the soil resource remains in agriculture and available to the next generation of farmers if preserved.

Cropping alternatives may present themselves as markets change through time and economics but if farm land preservation tools are reduced then we fail to protect these irreplaceable resources. Preservation options might include harvest management guidelines consistent with measurable criteria such as minimum harvest age and harvest technique and approach requirements. The University of Rhode Island has incorporated such language in lease solicitations currently being used to guide tenant use of over 200 acres of agricultural lands.

The information collected during this study is not yet complete. Data analysis will continue into 2016 and subsequent publication anticipated.

The author and study director greatly appreciates the support and funding provided by Rhode Island Department of Environmental Management and the US Department of Agriculture and expressed his appreciation to the men and women of the Rhode Island Nursery and Landscape Association and the New England Sod Producers Association for their collaboration, access and assistance during the study.

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